IN THE CLAIMS

What is claimed is:

1. (ORIGINAL) A method for non-invasive localized delivery of biologically active molecules to a region of a subject, comprising packaging a molecule(s) of interest inside an ultrasound-responsive particle, administering said particles to a subject, and inducing localized release of said molecules from said particles in the region using a focused energy source.

2. (ORIGINAL) The method of claim 1, wherein the ultrasound-responsive particle of the invention is selected from the group consisting of thermosensitive nanoparticles, thermosensitive liposomes, thermosensitive nanovesicles, thermosensitive polymersomes and thermosensitive nanospheres.

3. (ORIGINAL) The method of claim 1, wherein the molecules are released from the particles using any non-invasive method which induces localized hyperthermia, including focused ultrasound.

4. (ORIGINAL) The method of claim 1, wherein the subject is a human.

5. (ORIGINAL) The method of claim 1, wherein the subject is an animal.

6. (ORIGINAL) The method of claim 1, wherein a nanosphere or a viral vector is encapsulated within the particle.

7. (ORIGINAL) The method of claim 6, wherein the nanosphere or viral vector contains an agent for prolonged release over an extended period of time or interval release.

8. (ORIGINAL) The method of claim 1, wherein the particles are administered to the subject by a route selected from the group consisting of oral administration, intravenous administration, and administration via a nebulizer.

9. (ORIGINAL) The method of claim 1, wherein the subject is in need of treatment for a neural condition.

10. (ORIGINAL) The method of claim 9, wherein the particles are coated with any composition which promotes or enhances transport of the particles across the blood brain barrier.

11. (ORIGINAL) The method of claim 10, wherein the composition which promotes or enhances transport of the particles across the blood brain barrier is selected from the group consisting of Polysorbate 80/85 and antibodies which allow transport across the blood brain barrier.

12. (ORIGINAL) The method of claim 11, wherein the antibody is an anti-transferrin receptor antibody.

13. (ORIGINAL) The method of claim 9, wherein the method is selected from the group consisting of epilepsy, Alzheimer's disease, Parkinson's disease, stroke, pain management, depression, mental illness, psychological disorders, developmental learning disabilities, and post-traumatic neuronal cell loss.

14. (ORIGINAL) The method of claim 1, wherein the subject is in need of treatment for a condition selected from the group consisting of arthritis, cancer, heart disease, bone fracture, and internal bleeding.

15. (ORIGINAL) The method of claim 1, wherein the subject is in need of treatment for a condition which can be treated by targeted gene therapy, and the molecule of interest is a nucleic acid.

16. (ORIGINAL) The method of claim 1, wherein the subject's brain functionality is influenced or enhanced, including learning ability, memory alteration, perception of pain, sleep/waking state, emotion, hunger and libido.